

### REMARKS

In the Office Action mailed April 10, 2002, Claims 1-5 and 7 were rejected under 35 U.S.C. Section 112, second paragraph as indefinite. Further, Claim 1 was rejected under 35 U.S.C. Section 103(a) as unpatentable over Andrews (4591341) in view of Bergersen (3950851). Claims 2-5, 12-31, and 33-38 were rejected under 35 U.S.C. Section 103 (a) as unpatentable over Andrews in view of Bergersen and Kurz (4348178). Claims 6-11 were rejected under 103(a) as unpatentable over Andrews in view of Kurz. Claim 32 was rejected under Section 103(a) as unpatentable over Andrews in view of Bergersen and Kurz and further in view of Andreiko (5454717). Claims 1-32 were rejected under Section 103(a) as being unpatentable over Andrews (4591341) in view of Chishti (5975893).

In response, the Claims have been amended. In view of the amendment and the arguments below applicants respectively submit that all Claims and conditions for allowance.

### SECTION 112 REJECTION

Claims 1, 2, and 7 have been amended. Applicants respectfully submit that the amendment overcome Section 112 rejection. OK

### SECTION 103 REJECTION

Claim 1 was rejected under Section 103(a) as being unpatentable over Andrews in view of Bergersen. The Claims have been amended to show a plurality of appliances. Applicants respectively submit that in view of the amendment, Claim 1 is patentable over Andrews and Bergersen.

Claim 2-5, 12-31 and 33-38 were rejected under Section 103(a) as unpatentable over Andrews in view of Bergersen and Kurz. Kurz relates to an appliance with a tooth positioner mouthpiece and an electric motor mounted on an

oral bowl of the orthodontic headgear and mechanically coupled to the mouthpiece for introducing vibrations into the mouthpiece. Kurz discloses that the "malocclusions, no matter how pronounced can be corrected by a series of vibrating mouthpiece positioners which vibrate the teeth in progressive stages toward the ideal occlusion without the problem of excessive patient cooperation". Kurz at Col. 3, lines 22-27.

Although Kurz shows a plurality of vibration of positioners to move the teeth incrementally toward the ideal occlusion, Kurz does not show a plurality of appliances, each having a geometry selected to reposition the teeth from a first arrangement to a second arrangement. Kurz operates by an electrical vibration where as in the instant invention, shells with different geometries shaped to receive and resiliently re-position teeth from one arrangement to another arrangement are used. The operation of the shells is completely different from the operation of Kurz, and Applicant submits that Andrew, Bergersen and Kurz cannot render obvious the claim invention. Withdrawal of the rejection is respectfully requested.

Claims 6-11 were rejected under Section 103(a) as unpatentable over Andrews in view of Kurz. Here, neither Andrews nor Kurz shows the claimed specifics of appliances comprising polymeric shells having cavities and wherein the cavities of successive shells have different geometries shaped to receive and resiliently reposition teeth from the first to the second arrangement. Therefore, Andrews and Kurz cannot render obvious claims 6-11. Withdrawal of the rejection is respectfully requested.

Claim 32 was rejected under Section 103(a) as unpatentable over Andrew in view of Bergersen and Kurz and further view of Andreiko. Applicants respectively submit that Claim 32 is allowable since it depends on an allowable claim.

Finally, Claims 1-32 were rejected under Section 103(a) as unpatentable over Andrews in view of Chishti (5975893). Applicants respectively submit that there's no teachings to combine and to modify Andrews to include using a plurality of successful polymeric shells and hence there's no motivation to combine the two references. Therefore, Claims 1-32 are patentable over Andrews and Chishti. Withdrawal of the Section 103 rejection is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 408-470-1243.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

1                   1.       (Amended) A system for repositioning teeth from an initial tooth  
2 arrangement to a final tooth arrangement, said system comprising a plurality of dental  
3 incremental position adjustment appliances including:

4                   [one or more] a plurality of appliances, each having a geometry selected to  
5 reposition the teeth from a first arrangement to a second arrangement, wherein the  
6 appliances comprise polymeric shells having cavities and wherein the cavities of  
7 successive shells have different geometries shaped to receive and resiliently reposition  
8 teeth from the first to the second arrangement; and

9                   one or more wire and bracket systems to progressively reposition the teeth  
10 from one arrangement to a successive arrangement, the wire and bracket systems and  
11 appliances being deployed in seriatim to reposition teeth from the initial tooth  
12 arrangement to the final tooth arrangement.

1                   2.       A system as in claim 1, wherein the tooth positions defined by [the]  
2 one or more cavities in each successive appliance differ from those defined by the prior  
3 appliance by no more than 2 mm.

1                   3.       A system as in claim 1, comprising at least two intermediate  
2 appliances.

1                   4.       A system as in claim 3, comprising at least ten intermediate  
2 appliances.

1                   5.       A system as in claim 4, comprising at least twenty-five  
2 intermediate appliances.

1                   6.       A method for repositioning teeth from an initial tooth arrangement  
2 to a final tooth arrangement, said method comprising the following steps performed in a  
3 preselected order:

4                    successively placing three or more appliances having geometries selected  
5 to progressively reposition the teeth from a first arrangement to successive arrangements;  
6 and

7                    placing one or more wire and bracket systems to progressively reposition  
8 the teeth from one arrangement to a successive arrangement, the brackets and appliances  
9 being deployed in seriatim to reposition teeth from the initial tooth arrangement to the  
10 final tooth arrangement.

1                    7.        A method as in claim 6, where the tooth positions defined by [the]  
2 one or more cavities in each successive appliance differ from those defined by the prior  
3 appliance by no more than 2 mm.

1                    8.        A method as in claim 6, wherein the successively placing step  
2 comprises placing at least two additional appliances prior to placing the final appliance.

1                    9.        A method as in claim 8, wherein the successively placing step  
2 comprises placing at least ten additional appliances.

1                    10.      A method as in claim 9, wherein the successively placing step  
2 comprises placing at least twenty-five additional appliances.

1                    11.      A method as in claim 6, wherein the appliances are successively  
2 replaced at an interval in the range from 2 days to 20 days.

1                    12.      An improved method for repositioning teeth using appliances  
2 comprising polymeric shells having cavities shaped to receive and resiliently reposition  
3 teeth to produce a final tooth arrangement, wherein the improvement comprises  
4 determining at the outset of treatment geometries for at least three appliances to be used  
5 in combination with at least one wire and bracket system, the appliances are to be worn  
6 successively by a patient to reposition teeth from an initial tooth arrangement to the final  
7 tooth arrangement, wherein the cavities of successive shells have different geometries.

1                    13.      An improved method as in claim 12, wherein at least four  
2 geometries determined at the outset.

1                    14.      An improved method as in claim 13, wherein at least ten  
2 geometries are determined at the outset.

1                   15.     An improved method as in claim 14, wherein at least twenty-five  
2 geometries are determined at the outset.

1                   16.     An improved method as in claim 12, wherein the tooth positions  
2 defined by the cavities in each successive appliance differ from those defined by the prior  
3 appliance by no more than 2 mm.

1                   17.     A method as in claim 16, comprising at least two intermediate  
2 appliances.

1                   18.     A method as in claim 17, comprising at least ten intermediate  
2 appliances.

1                   19.     A method as in claim 18, comprising at least twenty-five  
2 intermediate appliances.

1                   20.     An improved method for repositioning teeth using appliances  
2 comprising polymeric shells having cavities shaped to receive and resiliently reposition  
3 teeth to produce a final tooth arrangement, wherein the at least three appliances are  
4 applied successively to a patient's teeth to reposition the teeth, wherein the improvement  
5 comprises repositioning the teeth using a wire and bracket system to initially reposition  
6 the teeth prior to applying the polymeric shell appliances.

1                   21.     An improved method as in claim 20, wherein at least four  
2 appliances are applied to the teeth.

1                   22.     An improved method as in claim 21, wherein at least ten appliances  
2 are applied to the teeth.

1                   23.     An improved method as in claim 22, wherein at least twenty-five  
2 appliances are applied to the teeth.

1                   24.     An improved method as in any of claims 20-23, wherein initially  
2 repositioning the teeth using a wire and bracket system configures the teeth to render  
3 them amenable to treatment with polymeric appliances.

1                   25.     An improvement as in claim 24, wherein initially repositioning the  
2 teeth alleviates at least one of the following conditions:  
3                   A-P correction of greater than 2 mm;  
4                   autorotation of the mandible required for vertical/A-P correction;  
5                   CR-CO discrepancy correction/treatment to other than centric occlusion;  
6                   correction of moderate to severe rotations of premolars and/or canines  
7 that are greater than 20 degrees;  
8                   severe deep bite opened to ideal or open bite to be closed to ideal;  
9                   extrusion of teeth greater than 1 mm other than as part of torquing or in  
10 conjunction with intruding adjacent teeth;  
11                  teeth tipped by more than 45 degrees;  
12                  multiple missing teeth;  
13                  crowns less than 70% of normal size;  
14                  posterior open bite; and  
15                  movement of entire arch required for A-P correction.

1                   26.     A method for treating a dental malocclusion, said method  
2 comprising:  
3                   providing criteria to distinguish between a less severe malocclusion and a  
4 more severe malocclusion;  
5                   determining whether an individual patient's malocclusion is more severe  
6 or less severe according to the criteria;  
7                   if the malocclusion is determined to be less severe, treating the patient  
8 with a plurality of successive polymeric shell appliances having different geometries  
9 selected to resiliently reposition teeth to a final desired arrangement; and  
10                  if the malocclusion is determined to be more severe, treating the patient  
11 successively in a predetermined order with (a) at least one wire and bracket system, and  
12 (b) a plurality of successive polymeric shell appliances having different geometries  
13 selected to resiliently reposition teeth, wherein the combined treatment repositions the  
14 teeth to a final desired arrangement.

1                   27.     A method as in claim 26, wherein the criteria which are  
2 characteristic of a more severe malocclusion include at least some of the following:  
3                   A-P correction of greater than 2 mm;

4 autorotation of the mandible required for vertical/A-P correction;  
5 CR-CO discrepancy correction/treatment to other than centric occlusion;  
6 correction of moderate to severe rotations of premolars and/or canines  
7 that are greater than 20 degrees;  
8 severe deep bite opened to ideal or open bite to be closed to ideal;  
9 extrusion of teeth greater than 1 mm other than as part of torquing or in  
10 conjunction with intruding adjacent teeth;  
11 teeth tipped by more than 45 degrees;  
12 multiple missing teeth;  
13 crowns less than 70% of normal size;  
14 posterior open bite; and  
15 movement of entire arch required for A-P correction.

1 28. A method as in claim 27, wherein the absence of some or all of the  
2 criteria characteristic of a severe malocclusion indicates that it is a less severe occlusion.

1 29. A method as in any of claims 26-28, wherein providing criteria  
2 comprises providing a list of criteria.

1 30. A method as in claim 26, wherein determining whether the  
2 malocclusion is more or less severe comprises obtaining a model of the patient's teeth.

1 31. A method as in claim 30, wherein the model is a cast.

1 32. A method as in claim 30, wherein the model is digital.

1 33. A method as in claim 26, wherein determining whether the  
2 malocclusion is more or less severe comprises visually observing the patient's teeth.

1 34. A method as in claim 26, wherein the predetermined order is to  
2 treat the patient's teeth first with the wire and bracket system to partially reposition the  
3 teeth until the malocclusion is less severe according to the criteria and then treating the  
4 patient with the polymeric shell appliances.



35. A method as in claim 26, wherein the predetermined order is to treat the patient's teeth first with the polymeric shell appliances and then with the wire and bracket system.

36. A method as in claim 26, wherein treating the patient with a plurality of successive polymeric shell appliances comprises successively placing at least three appliances each over a time period in the range from one to four weeks.

37. A method as in claim 36, wherein at least ten successive polymeric appliances are placed.

38. A method as in claim 36, wherein at least twenty-five successive polymeric appliances are placed.